

H083 MAINTENANCE NOTE NO. 2
(For Electronics Technicians)

2. Transmitter Box Door Seal Repair

GENERAL

This maintenance note contains instructions to correct the problem of water leaking into the H083 transmitter box by application of an RTV sealing compound, for those transmitter door seals that were improperly installed.

EQUIPMENT TOOLS REQUIRED

1. Standard complement of tools.
2. RTV silicone sealing compound found in Engineering Handbook No. 1 listed under Miscellaneous Supplies and Materials (WSSN 052-C-6).
3. Wax paper or silicone grease (to be used as a mold release on the inside of the transmitter box, opposite the door seal).

REFERENCE DOCUMENTATION REQUIRED

See Figure 1.

PROCEDURE

1. Open the transmitter door on the H083.
2. Apply RTV sealing compound liberally filling the gap between adjacent door seals with an excess amount of compound to ensure a good seal.
3. After using wax paper or a thin layer of silicone grease opposite the door seal to act as a mold release, close and secure the transmitter door. Leave in place until fully cured (about 24 hours).
4. After fully cured, remove wax paper or wipe off silicone grease.

HO-83 TRANSMITTER DOOR SEAL

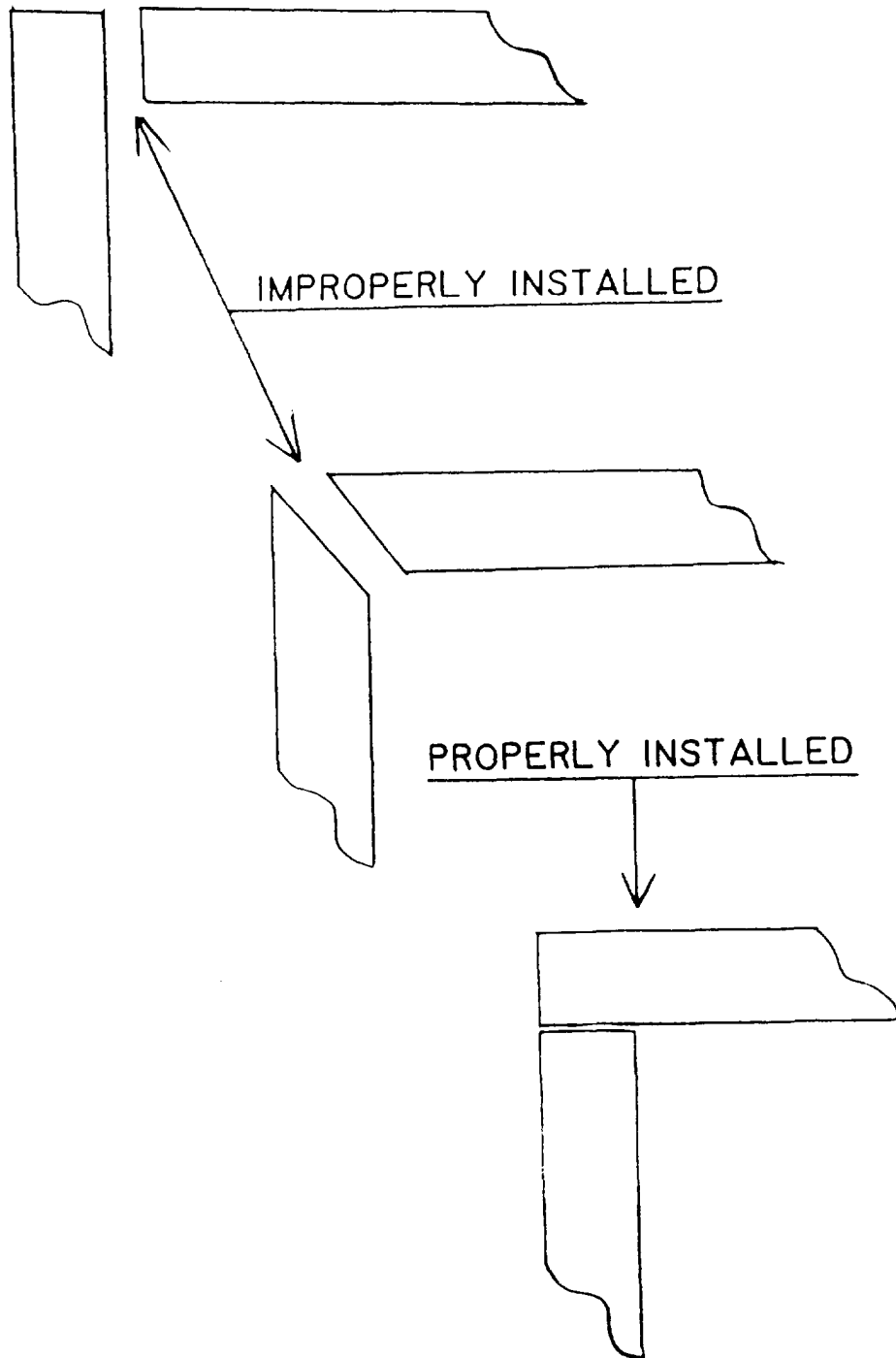


FIGURE 1



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL WEATHER SERVICE
Silver Spring, Md. 20910

W/OS0321 - WDH

October 7, 1986

TO: All NWS Regional Headquarters, Area Electronics Supervisors, and
Electronics Technicians (EHB-8 Distribution)

FROM: W/OS03 - J. Michael St. Clair *J. M. St. Clair*

SUBJECT: Transmittal Memorandum for Engineering Handbook No. 8, Issuance 86-9

1. Material Transmitted:

Engineering Handbook No. 8, Surface Equipment, Section 2.8^{2.4}, Hygrother-
mometer (H083) Maintenance Note 2: Errata Sheet No. 1.

2. Summary:

Under equipment, tools required, Item 2, the Weather Service stock number
052-C-6 was erroneously listed as RTV Silicone Sealant and Adhesive. The
number which should be inked in is 052-C-1.

3. Effect on Other Instructions:

Pen-and-ink addition.

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Issuance 86-9



ERRATA SHEET NO. 1 TO MAINTENANCE NOTE 2

In Maintenance Note 2, under equipment, tools required, Item 2, the Weather Service stock number 052-C-6 was erroneously mentioned as an RTV Silicone Adhesive. This number should be changed to read 052-C-1 which is RTV-102, a Silicone Rubber Adhesive.



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration

NATIONAL WEATHER SERVICE
Silver Spring, Md. 20910

W/OTS141: WDH

April 18, 1986

TO: All NWS Regional Headquarters, Area Electronics Supervisors, and
Electronics Technicians (EHB-8 Distribution)

FROM: W/OTS1 - J. Michael St. Clair

SUBJECT: Transmittal Memorandum for Engineering Handbook No. 8 Issuance 86-4

1. Material Transmitted:

Engineering Handbook No. 8, Surface Equipment, Section ^{2.4}~~2.8~~ Hygrothermo-
meter (H083), Maintenance Note 3: H083 Maintenance Updates--Dewpoint
Sensor Mirror Cleaning, Dewpoint Sensor Factory Modification, and "0" Ring
Inspections.

2. Summary:

It was recently determined that the cleaning solution used with the
dewpoint sensor mirror is more critical than originally realized. This
maintenance note provides information instructing the technician to use
isopropyl alcohol to clean the mirror. It also contains instructions for
obtaining factory modification to the dewpoint sensor assembly (H083-1A1)
and "0" ring inspection instructions.

3. Effect on Other Instructions:

All previous dewpoint sensor cleaning procedures shall be replaced by this
one.

EHB-8
Issuance 86-4



H083 MAINTENANCE NOTE NO. 3
(For Electronics Technicians)3.0 H083 Maintenance Updates --Dewpoint Sensor Mirror Cleaning, Dewpoint Sensor
Factory Modification, and "O" Ring Inspections.GENERAL

This maintenance note contains information to correct the problem of low dewpoint readings and iced-up mirrors due to the use of improper cleaning solutions. It also contains instructions for obtaining factory modification to the dewpoint sensor assembly (H083-1A1) and "O" ring inspection instructions.

I. ISOPROPYL ALCOHOL APPLICATION PROCEDUREBACKGROUND

Extreme care should be exercised when cleaning the mirror to ensure that none of the three optic elements (LED and two photo transistors) are accidentally bumped during the cleaning process. Once any of these elements are moved, a realignment in a laboratory environment is required, since this alignment is a very delicate and critical procedure. An iced up mirror can result from an optic misalignment, or a mirror that has been improperly cleaned. The cleaning solution that is used with the dewpoint sensor mirror is more critical than originally realized. For example, most lens cleaning solutions are not suitable because most contain an anti-fogging or wetting element. In addition, we've tested head cleaning solutions, including one stocked at NLSC, and found them unsatisfactory. They caused an unpredictable dew layer pattern, which could lead to icing, depending on the pattern. The only solution we can recommend at this time is an isopropyl alcohol and distilled water compound and the highest percentage of isopropyl as possible. The greater the percentage of isopropyl, the faster the rate of evaporation, a desirable trait when cleaning the mirror. We have also found, through testing, a very good cleaner in our stock at NLSC. This solution is a 91% isopropyl and 9% de-ionized water compound and is packaged as a presaturated pad contained in a foil packet. It is called a Texpad and is located in Handbook No. 1 under:

M001 - 1A1A2MS2

Texpads, presaturated with isopropyl alcohol, Texwipe Co. P/N
TX801. 7530-01-022-6664

It is highly recommended that only these pads be used to clean the mirror. It should also be noted that our testing indicates that presaturated pads give better results than aerosol cleaners; we suspect aerosol propellents cause problems.

PROCEDURE

Detailed cleaning procedures are provided below.

1. Open the transmitter door on the H083 and switch the power off.
2. Remove aspirated sensor assembly from shield.
3. Clean the mirror using the presaturated Texpad being extremely careful not to knock any parts in the optical system out of alignment.
4. Return sensor assembly to shield.
5. Restore power.

II. DEWPOINT SENSOR FACTORY MODIFICATION

The dewpoint sensor has been experiencing a number of water related problems which require a factory modification. It will provide the following changes to this assembly:

1. Connector will be replaced with a better version.
2. A thicker conformal coating will be applied; actually two coats.
3. The porous foam, located under the heat sink, will be replaced with a closed cell foam donut.
4. A fiberglass dam will be installed above the mirror on the printed circuit board, to prevent water droplets from running down the board and across the mirror surface.

Arrangements have been made for you to send your spare dewpoint sensor assembly directly to the factory and, after rework it will be sent directly back to you. In this way you should have your assembly back in days instead of weeks. To insure minimum problems follow this procedure:

1. Fill out a franked mailing label to:

Technical Services Laboratory, Inc.
630 Lovejoy Road
Fort Walton Beach, Florida 32548
ATTN: Joe Boudreau

2. Also fill out PS Form 3811 (U.S. Postal Service Return Receipt).
3. Also fill out PS Form 3800 (Receipt for Certified Mail). Tear off the sticker on the end, this goes on the outside of the box along with Items 1 and 2.
4. Before you seal the box with the sensor in it, fill out one more franked mailing label with your station mailing address on it so the factory can send the sensor back to you in a timely manner. Place this label inside the box. Now seal the box and mail it to the factory and when you get it back repeat this process for your remaining dewpoint sensor assemblies.

III. "O" RING INSPECTIONS

One final comment concerns the recent "O" ring modification. The neoprene "O" ring that was procured for the modification was not neoprene, but a material that is suspected to be buna or butyl. We are replacing our existing stock with neoprene "O" rings. Inspect your "O" ring carefully each time you make a trip to the sensor site and replace the "O" ring as needed. A neoprene "O" ring will last years versus months for the other materials. Please order NLSC Stock H083-2A1MP1 "O" Ring.



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL WEATHER SERVICE
Silver Spring, Md. 20910

November 14, 1986

W/OS0321 - WDH

TO: All NWS Regional Headquarters, Area Electronics Supervisors, and
Electronics Technicians (EHB-8 Distribution)

FROM: W/OS03 - J. Michael St. Clair *J. M. St. Clair*

SUBJECT: Transmittal Memorandum for Engineering Handbook No. 8, Issuance 86-11

1. Material Transmitted:

Engineering Handbook No. 8, Surface Equipment, Section ^{2.4}~~2.3~~;
Hygrothermometer (H083) Maintenance Note 4: Installation of Modem.

Note: These modems are intended only for those sites with problem telephone lines and are not intended for general distribution.

2. Summary:

Maintenance Note 4 provides instructions for installation of modems for those stations that are having telephone line problems.

3. Effect on Other Instructions:

None.

EHB-8
Issuance 86- 11



H083 MAINTENANCE NOTE
(For Electronics Technicians)

4. Installation of Modem.

GENERAL

This maintenance note provides information for improving signal conditions associated with poor voice grade telephone lines. The H083 Modem Model H083-4 allows the H083 Hygrothermometer to communicate via the telephone system over voice grade lines. This is a simplex modem, and two are required to establish a communication link. Each modem has the capability of operating in a transmit or receive mode.

1.0 TRANSMITTER INSTALLATION PROCEDURE

1.1 Background

The modem is Bell 202 compatible with a "mark" frequency of 1200 Hz and a "space" frequency of 2200 Hz. The modem will operate over the specified temperature range of the H083 system (-50 to +50 degrees Celsius). In the transmit mode, the modem outputs a carrier at a level of -9 dBm coupled through a 600-ohm balanced transformer. The modem converts the H083 transmitter 12-volt peak-to-peak output signal to a 5 Vdc logic level before converting it to a FSK signal.

1.2 Procedure

- A. Turn power off in the transmitter using switch, S1, and disconnect AC power at the breaker or fuse box.
- B. Cut the male plug off the AC power cord on the H083 modem, and replace it with two spade lugs (for a #4 post).
- C. Connect this power cord to the H083 transmitter TB1-1 and TB1-3.
- D. Use a wire pair, approximately 10 inches in length, to make the signal connection between the H083 transmitter and the modem as follows:

Transmitter		Modem
TB2-1	to	TB1-2
TB2-3	to	TB1-1

Note: Observe polarity.

- E. Connect the telephone signal lines to the modem TB2-1 and TB2-2.
- F. Slide the switch on the panel toward TB1 (left side) for transmit mode.
- G. Place the modem in the bottom of the H083 transmitter enclosure (on its side) with the terminations pointing to the right side of the enclosure; or place it behind the transmit logic board with the wires running over and down along the side of the right card holder for the board.
- H. Restore main power to the H083 transmitter, and return power switch S1 in the H083 transmitter to its On position.

2.0 DISPLAY INSTALLATION PROCEDURE

2.1 Background

When used in the receive mode, the modem has an input sensitivity of -35 dBm. The FSK signal is converted to a 5 Vdc logic level, then converted into a lo-volt peak-to-peak output signal for the H083 display. You can have communication problems due to the type and length of your lines or the network the signal will pass through. These problems are usually some type of frequency, amplitude, or group delay distortion which affects the signal envelope. This modem has a built-in equalizer to minimize these problems. An equalizer is a filter with amplitude and phase characteristics designed so that when cascaded with the phone line response, the combined amplitude and group delay characteristics are flattened. These modems are normally shipped with the equalizer off.

2.2 Procedure

- A. Turn power off at the H083 Display Unit by moving S1 on the back panel to the Off position.

Note: The modem may be placed anywhere in the signal path leading into the H083 display that is convenient to your installation.

- B. Cut the signal cable and prepare the wires.

- C. The connection between the H083 Display and the modem is as follows:

Display		Modem
31-1	to	TB1-2
J1-3	to	TB1-1

Note: Observe polarity.

- D. Connect the telephone signal line to the modem TB2-1 and TB2-2.
- E. Slide the switch on the panel toward TB2 (right side) for receive mode.
- F. Restore power to the H083 display by moving S1 to the On position, and plug the power cord of the modem into an AC power outlet.

3.0 COMMUNICATION PROBLEMS:

If you have communication problems, try the following.

- A. Disconnect power to the modem at the H083 Display.
- B. Open the modem and verify that the modem is set with the equalizer off. With the power supply at the bottom, locate and check the position of the switch adjacent to the crystal. If the switch is positioned toward the front (signal terminations), the equalization is on. If it is positioned toward the back (power supply), it is off.
- C. Turn the equalizer on by sliding the switch toward the front of the modem.
- D. Reconnect power to the modem and check the H083 Display. In the instantaneous mode, the tenth digit may be changing, based on present weather conditions. In the average mode, remember to wait at least five minutes for the buffer to average out.

Most problem sites have been identified and modems distributed. A limited number of additional modems will be available from NWS special stock at NLSC in the near future under the following number: H083-4 in Project 820--Item 17.

Questions regarding this modem should be directed through your regional headquarters to the following:

NOAA/National Weather Service
8060 13th Street W/OS031
Silver Spring, Maryland 20910
A. B. Spencer, Room 330
FTS 427-7843

H083-4 Modem Availability

1. Summary:

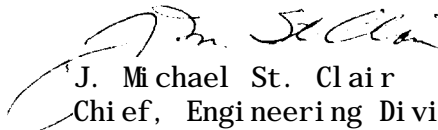
This errata sheet is to notify the electronics technician of a recent stock change of H083-4 modems from special projects to regular stock.

2. Equipment Required:

- a. Normal installation requires two units.
- b. H083-4 modems are in regular stock under NSN 6660-00-623-0000-X.

3. Effect on Other Instructions:

None.


J. Michael St. Clair
Chief, Engineering Division

EHB-8
Issuance 88-4
10-28-88



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration

NATIONAL WEATHER SERVICE
Silver Spring, Md. 20910

April 7, 1987

W/OS0321 - WDH

TO: All NWS Regional Headquarters, Area Electronics Supervisors, and
Electronics Technicians (EHB-8 Distribution)

FROM: W/OS03 - J. Michael St. Clair *J. M. St. Clair*

SUBJECT: Transmittal Memorandum for Engineering Handbook No. 8, Issuance 87-3

1. Material Transmitted:

Engineering Handbook No. 8, Surface Equipment, Section ^{2.4}~~2.8~~;
Hygrothermometer (H083) Maintenance Note 5: Addition of Digital Displays
to Stock.

2. Summary:

Maintenance Note 5 provides information concerning the addition of
incandescent digital displays for the H083 receiver to NLSC stock.

3. Effect on Other Instructions:

None.

EHB-8
Issuance 87-3



H083 MAINTENANCE NOTE
(For Electronics Technicians)5. Addition of Displays to Stock

In the past, the Numeric Display Boards (3A4A1-3A4A4) were considered LRU's. Due to the frequent failure of the incandescent display chips, it was decided to stock them at NLSC so that fast and easy replacement could be achieved. To conserve your supply of display chips, a failed decimal point should be moved to another digit (also a reminder that your spares kit has spare display chips). The chips should be available from stock in the June-July 1987 time frame under the following NSN: 7025-01-077-7315.

H083 MAINTENANCE NOTE 6 (for Electronics Technicians)

Engineering Division

W/OS0321: WDH

6. H083 Sensor Optics Alignment

GENERAL

This maintenance note contains information for correcting an optical misalignment by the use of an infrared-sensitive viewing card. This enables the electronics technician to actually see the position of the beam on the mirror and change it if necessary. One obvious consequence of optical misalignment is icing of the dewpoint sensor mirror. We recommend that every dewpoint sensor be checked for optical alignment when this viewing card is available.

Effect on Other Instructions:

None

Equipment and Tools Required:

Standard complement of tools
Dual trace oscilloscope
1 1/4-inch x 6-inch phosphor card (sent to each station)
9/16-inch x 2 9/16-inch transparent target (included with Phosphor card)
1-inch piece of masking tape

PROCEDURE

1. Read the entire alignment procedure first.
2. Turn the H083 system power OFF.
3. Remove the transmitter/sensor assembly from its mounting pole, and transport it to your station or equivalent facility.
4. Remove the transmitter card 2A1 and make the following adjustments:
 - a. Turn the Sd pot fully counterclockwise (10 turn pot);
 - b. Use a clip lead to short across R67;
 - c. Connect channel 1 of the dual trace oscilloscope to the left side of R3 (board fingers pointed toward you), channel 2 to the left side of R6, and scope common to H083 system ground (case); and
 - d. Carefully install transmitter card in system.
5. Remove aspirator unit from its shell, and place the aspirator on a work bench. Clean mirror, projector LED lens, and both detector lenses.

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6- 25- 87

6. Place the infrared strip under a fluorescent lamp for 30 seconds. The purpose of this step is "charging." According to the manufacturer, the strip will stay charged for months.
7. Position the transparent target over the mirror, and tape down the opposite end (see figure 1).
8. Slide the infrared strip between the mirror and target (see figure 2). You may have to trim about 3/16 inch from either side of the clear plastic material next to the 3/4-inch square sensitive area.
9. Power system ON and observe position of LED light in a dimly-lit area. It may be necessary to slide the infrared strip around to find the LED beam. After beam is found, manually adjust the LED to position beam on the target area.
10. Remove target and infrared strip from sensor.
11. Observe voltage on channel 1 of scope, and manually adjust Sd detector for +4 VDC.
12. Check Si detector on the printed circuit card, and manually align this detector with the alignment mark on the card (same angle).
13. Observe channel 2 of scope and adjust Si pot for -2 V.
14. Remove short on R67.
15. Breathe on mirror to produce a fog. Manually adjust Si detector for a maximum negative voltage.

NOTE: Move and adjust Si only toward or away (perpendicular) from vertical circuit card.

16. Turn power OFF to system.
17. Remove all test equipment and place H083 back into operation.
18. Readjust Sd and Si gainpot according to standard procedure on door.
19. Observe the dew layer on the mirror after alignment. The dew layer on the mirror should be as thin as possible. (If this condition is not met, the entire procedure, starting with step 2, must be repeated.)

NOTE: It must be stressed that the optical alignment on the H083 is critical. A thin layer of dew must be maintained for correct operation.



J. Michael St. Clair
Chief, Engineering Division

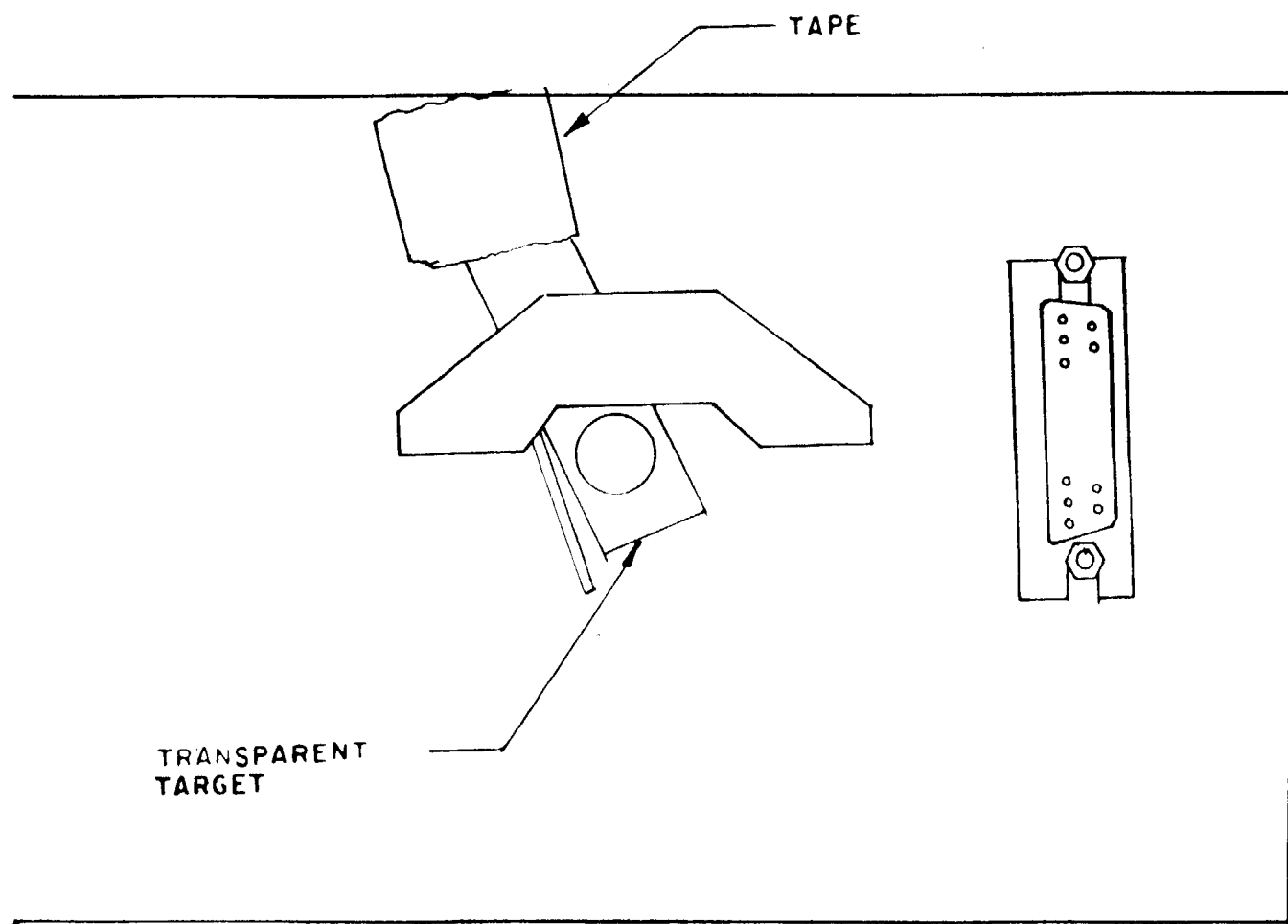


FIGURE 1

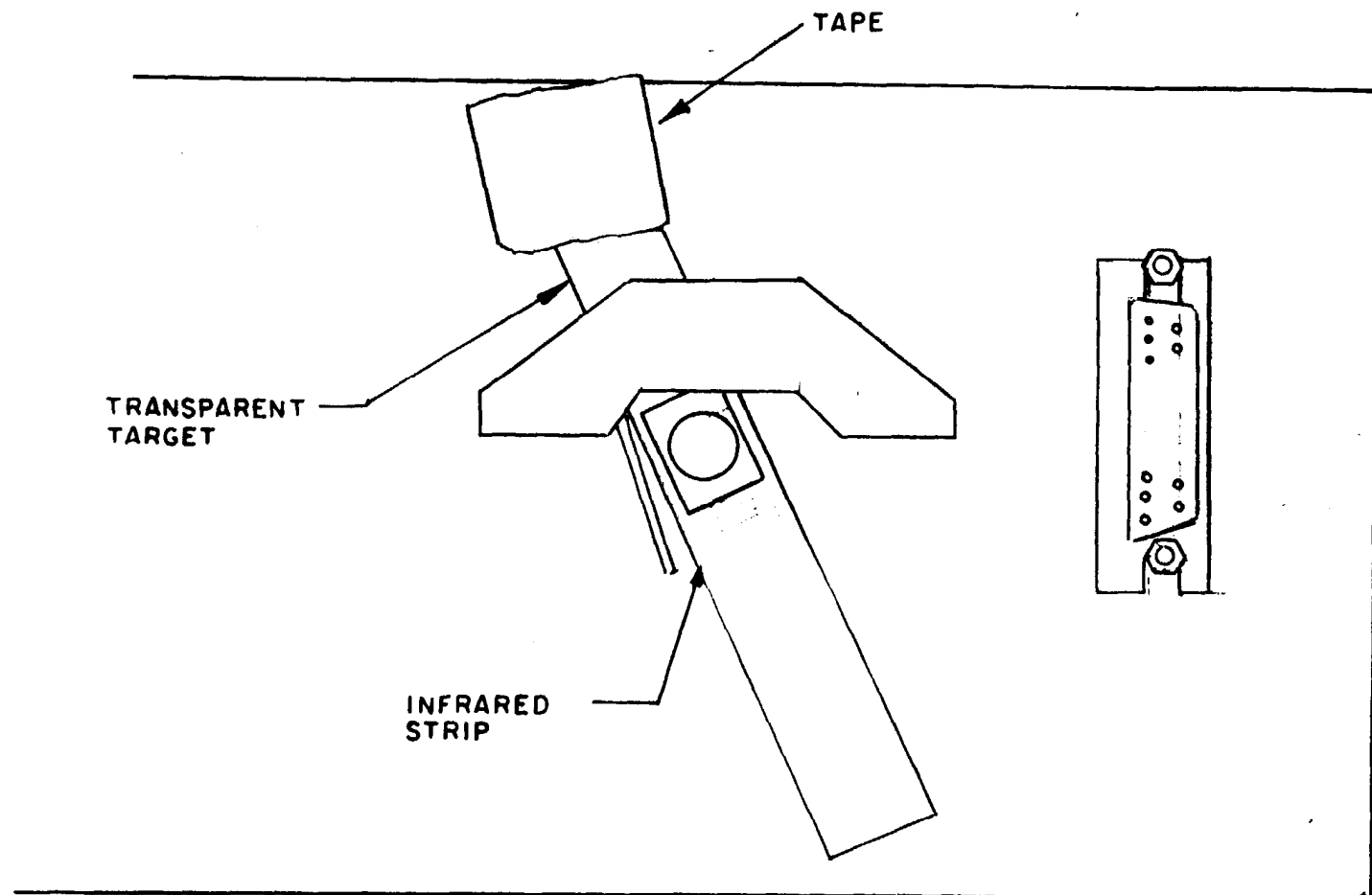


FIGURE 2

H083 Transmitter Door Seal Replacement

General

1. Summary:

This maintenance note contains information that will correct the problem of water leaking into the transmitter box due to a defective seal.

2. Equipment Required:

- a. Neoprene gasket is located in regular stock under NWS No. H083-2A1MP1.
- b. Neoprene gasket cement is located in regular stock under NWS No. H083-2A1MP1A.

3. Effect on Other Instructions:

This maintenance note supercedes instructions contained in Maintenance Note No. 2.

Procedure

1. Open the transmitter door on the H083.
2. Remove the old gasket and clean off the old sealing compound.
3. Degrease the gasket area with a solvent such as alcohol.
4. Apply the Neoprene gasket cement to one side of the gasket as well as to the area it is to adhere to.
5. Let dry for a few minutes; then carefully align the gasket before putting it into position, as this is contact adhesive and will immediately stick.
6. Close the transmitter door.



J. Michael St. Clair

Chief, Engineering Division



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL WEATHER SERVICE
Silver Spring, Md. 20910

W/OS031: HDD

JUL - 1 1994

MEMORANDUM FOR: Deputy Administrator for Modernization
Directors, All NWS Headquarters Offices
Directors, NWS Eastern, Southern, Central, and
Western Regions

FROM: Richard R. Reynolds *Dick*
Surface Observation Modernization Manager

SUBJECT: Removal of Non-ASOS Hygrothermometers

The ASOS contract requires that approximately 400 non-ASOS H083s be removed and reused as ASOS production units. The hygrothermometers will be refurbished and will be incorporated into the production supply for future ASOS installations. The refurbishment cycle takes approximately 4 months for the contractor to complete, and there are only 4 months of new hygrothermometers available. There are many complications that have delayed the removal of the old hygrothermometers, and we now need your assistance in satisfying the Government's contract requirements.

Although we have not completely resolved all questions associated with both sensor and site-specific data continuity issues, we can begin by removing non-ASOS hygrothermometers from sites that are not LCD sites or from LCD sites that have been monitored at the AOMC for at least 1 year (both their ASOS and manual observations have been archived at NCDC through the SRRS).

Attached is a list of sites that we believe meet the following criteria and therefore the non-ASOS hygrothermometers should be removed and returned to NRC:

- o The site is not a participant in the Data Continuity Study;
- o The ASOS hygrothermometer at the site is in the current configuration (Engineering Modification Notes 9, 16, and 17 completed);
- o The site is either not an LCD site, or it has been monitored by the AOMC for at least 1 year with all temperature performance modifications in place.



If you do not agree that a particular site meets these criteria, please tell us why. Otherwise, please remove the non-ASOS hygrothermometer and return it to NRC as quickly as you can using removal procedures that will be sent under a separate cover.

We will send you a list of sites that will soon have been monitored for 1 year and ask that you remove them after that time. We should also add sites to the group monitored by the AOMC as quickly as we have communications and a maintenance capability so that we have a continuous supply.

The list also indicates whether or not the site has a non-ASOS LBC (K220). Please let us know if this information is incorrect since we will be using it later to plan and coordinate the removal of non-ASOS LBCs at some time in the near future.

Our point of contact is Hoan Dang at (301) 713-0864. The removal, shipping, and notification procedures will be forwarded directly to the regional SOD Chiefs.

Attachment

cc:

E/CC1 - J. Jensen
 SP02 - R. Alhberg
 W/OM23 - J. Courchesne
 W/OS01X2 - J. Facundo
 W/OS014 - J. Schiesl
 W/OS021 - R. Thi gpen
 W/OS031 - W. Fellows
 W/OS031 - H. Dang
 W/OS032 - A. Wi ssman
 W/OS032 - J. Monte
 W/OS0332 - R. Helphrey
 W/OS0332 - R. Wi ggi ns
 W/ER4 - T. Wilk
 W/ER41x4 - A. Lowe
 W/SR4 - T. Grayson
 W/SR41x4 - C. Bohanan
 W/CR4 - T. Schwein
 W/CR41x4 - J. Shi nn
 W/CR41x4 - W. Johnson
 W/WR4 - G. Rasch
 W/AR41 - H. Hobart
 W/AR41 - E. Doerr
 W/PR11 - R. Di az
 W/PR11x2 - P. Oudeman
 W/TC1 - R. Johnson

H083 Maintenance Note 8 (for Electronics Technicians)

Engineering Division

W/OS031: CWR

Maintenance of Aspirator Housing and Sun Shield

General

During a random inspection of H083's, some aspirator housings showed different states of paint deterioration. Paint conditions ranged from fading and shades of gray to peeling. The housing should be covered with a uniform coat of high gloss white paint.

We have received a number of sun shields with burrs and sharp edges around the perimeter. For safety, correct these defects if found.

Procedure

The paint condition on the H083 varies with age and geographical location. H083 paint integrity can be checked at the regular maintenance schedule.

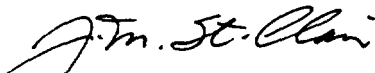
WARNING

Before any sanding or painting operations, power down the H083 system and remove the sensor from its housing. Use a 3M disposable N10H mask (or equivalent) during sanding and painting operations.

If the housing is not peeling, sand the surface lightly with 150 grit - sandpaper. After sanding, clean the surface with alcohol and spray with high gloss white polyurethane paint.

If paint is peeling from the housing, sand the peeled areas down to bare metal, feather the edges, and clean. Prime bare areas with zinc chromate and paint with high gloss polyurethane paint.

Inspect the sun screen and remove any defects with a metal file.



J. Michael St. Clair
Chief, Engineering Division

H083 HYGROTHERMOMETER SYSTEM MAINTENANCE NOTE 9 (for Electronics Technicians)

Engineering Division

W/OS0321: BGM

Replacement of the H083 Aspirator Cable

General

This maintenance note provides information on obtaining the necessary parts to replace a defective H083 aspirator cable. WSH Engineering has purchased g-pair, 22 AWG twisted pair, individually shielded cable for replacement of the H083-1W1 cable. The cable is stocked in 5.5-foot lengths without connectors.

Procedure

The aspirator cable and connectors are stocked under the following numbers in Engineering Handbook 1.

ASN H083-1W1 NSN 5995-92-000-0017-X CABLE

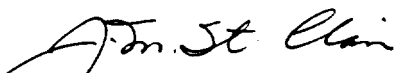
ASN H083-1P1 NSN 6660-01-206-1230 PLUG, 15-PIN "D"

ASN H083-1P2 NSN 6660-01-295-7174 PLUG, 26-PIN, MS3116

For removal and replacement of the W1 aspirator cable, follow the procedure in "Instruction Manual 8-406 Hygrothermometer (H083) Volume #2", Section 4.1 (Repair Notes). The cable should be 5 feet long from connector to connector when completed.

Effect on Other Instructions

None.



J. Michael St. Clair

Chief, Engineering Division

H083 MAINTENANCE NOTE 10 (for Electronics Technicians)

Engineering Division

W/OS0321: BGM

Use of the Redesigned H083 Dewpoint Sensor

General:

This maintenance note provides the information necessary to use the redesigned dewpoint sensor in the H083 Hygrothermometer System.

The redesigned sensor provides much higher reliability than the original sensor, especially for corrosion, mirror icing, and optical alignment. The sensor differs from the original sensor in several ways: an optical block provides permanent alignment of the optical elements, it has a higher quality mirror, sensor connections are wired rather than using printed circuit card connections, the mirror is thermally isolated from the card, and the connector is potted and mechanically separated from the card.

Replacement of the original sensor with the redesigned sensor is being done by attrition. An initial stock of the new sensors is on hand at NLSC. Both types of sensors will be used as H083 sensors. Both types of sensors will be repaired as required. Only the redesigned sensor will be procured as replenishment stock.

The redesigned sensor is stocked under the following numbers in Engineering Handbook 1:

ASN: **H083-1A1-1** NSN: **6660-92-000-0002-X**

The sensor will be marked with the TSL P/N 1063-104F.

Effect on Other Instructions:

Instructions for optical alignment in Section 2.4, Maintenance Note 6, do not apply to the redesigned sensor.

Procedure:

Determine which sensor is installed in your system.

Follow existing procedures for the original sensor (1063-104).

For the 1063-104F sensor, follow existing procedures with the following exceptions.

OPTICAL ALIGNMENT

Inspect the optical block to ensure the base of the block is parallel to the card. If not, loosen the nut holding the block, rotate the block to make it parallel to the card, and tighten the nut.

Inspect the light valve (the screw and lock nut installed in the block to interrupt the 'light' from the LED) to ensure it is in the fully out position.

TRANSMITTER CALIBRATION

Adjust TA0 and TD0 to 31.0 ± 0.2 rather than 32.0 ± 0.2 for the 0 calibrate switch position.

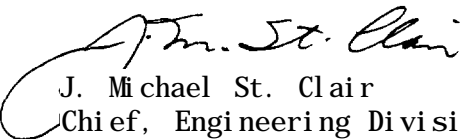
Adjust TA+ and TD+ to 21.0 ± 0.2 rather than 22.0 ± 0.2 for the +50 calibrate position.

With the calibrate switch in the -50 position, check that the TA monitor reads -59 ± 0.5 (rather than -58 ± 0.5) and the TD monitor reads -68.7 ± 0.5 (rather than -67.7 ± 0.5).

OPTICAL LOOP ADJUSTMENT

At the completion of the current optical loop adjustment, turn the SI pot one turn counterclockwise. The optic block and higher quality mirror in the 1063-104F sensor give a dew layer that is too thin for proper long-term operation when adjusted using only the existing procedure. The additional adjustment decreases the gain of the SI loop, which provides the proper dew layer thickness.

These changes in the calibration and optical loop procedures compensate for the differences between the sensors and make the 1063-104F perform the same as or better than the 1063-104.


J. Michael St. Clair
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H083 MAINTENANCE NOTE 11 (for Electronics Technicians)

Engineering Division

W/OS0321: BGM

H083 Mirror Cleaning Procedure.

General:

Recent experience with hygrothermometers shows a need to revise the mirror cleaning procedure and to emphasize the importance of mirror cleanliness.

The performance of the dewpoint sensor depends directly on the use of proper cleaning agents and procedures for the mirror. Many dewpoint maintenance problems can be traced to improper mirror cleaning, although they appear to be hardware failures.

Various contaminants that can accumulate on the mirror surface have different effects on sensor performance. Contaminants primarily consisting of particles such as dust and pollen affect performance the least. The sensor tolerates a substantial layer of these contaminants because they have little effect on formation of the dew layer. Other contaminants, however, may seriously affect the sensor. Contaminants known to cause problems are cleaning compounds such as detergents, soaps, and ammonia; oily substances such as skin oil and petroleum products; and substances that have an affinity for water such as various salts including common salt. These contaminants interfere with dew layer formation and cause performance problems including mirror icing and elevated dewpoint temperatures.

Effect on Other Instructions:

Make a pen and ink notation in the H083 Maintenance Schedule (for electronics technicians), Section 4.8, to use H083 Maintenance Note 11, Section 2.4, when cleaning the mirror in Step 3 of the Maintenance Schedule.

Procedure:

This cleaning procedure supersedes previous cleaning procedures.

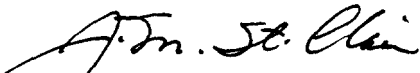
1. Heat the mirror above ambient temperature using the Heat/Cool test switch in the Heat position. Turn off the H083 AC power. Set the autobalance pot to the 0 position.
2. Using a clean cotton swab and distilled water, thoroughly wet the mirror surface and then wash with a gentle, circular motion. Immediately wipe the wet surface with a clean, dry swab until dry and all loosened material is removed. Continue the wet swab and dry swab process until it no longer has a cleaning effect. The dry swab is essential to the cleaning process as it removes the loosened contaminants that would otherwise remain on the mirror. For colder temperatures, it may be necessary to disconnect the dewpoint sensor assembly from the transmitter enclosure and do the cleaning in a warmer place.

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3. Repeat step 2 using lacquer thinner (acquired from a local source). Repeat the wet swab and dry swab process until it no longer has a cleaning effect.
4. Repeat step 2 using approved isopropyl alcohol (ASN 052-C-12). Repeat the wet swab and dry swab process until it no longer has a cleaning effect.
5. Reapply AC power. Heat mirror to 20°F above ambient temperature or 52°F, whichever is higher. Perform the optic loop adjustment.

This completes the procedure.



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Non-ASOS H083 Removal at Select Sites

GENERAL -

This note provides instructions for removing non-Automated Surface Observing System (ASOS) H083 hygrothermometers at select sites. Candidate sites are listed in memorandum W/OS031:HDD dated July 1, 1994; and subsequent memoranda. The sensors and transmitters will be refurbished and used in the ASOS. Please remove and return the hygrothermometers as soon as possible.

PROCEDURE

I. First Things First

- A. Coordinate removal with regional headquarters (EPM), and field level supervisor (AES/ESA/MIC).
- B. Order special packing box from NLSC for H083 transmitter and aspirator units using stock number S100-H083-BX.
- C. Find box suitable for packing and shipping all non-ASOS H083 display unit(s) located in observer's area.
- D. Notify observer(s) of impending removal.

II. Transmitter and Aspirator Units

- A. Disconnect power.
 - 1. Turn off AC circuit breaker for non-ASOS H083.
 - 2. Turn off transmitter unit's (electronic enclosure) main power.
- B. Remove subassemblies.
 - 1. Record serial number of H083.
 - 2. Remove aspirator (including angle bracket) from transmitter (electronic enclosure).
 - 3. Disassemble angle bracket into struts.
 - 4. Remove transmitter from mounting pipe.

- C. Pack and ship subassemblies and any kit of spare parts not needed to maintain H083s at other sites to National Reconditioning Center (NRC).
 - 1. Use special packing box from NLSC with stock number S100-H083-BX.
 - 2. Pack transmitter, aspirator, struts, and screws into the box.
 - 3. Include H-14 forms.
 - a. 1 for transmitter
 - b. 1 for aspirator
 - c. enter organization code of technician doing removal in Block 2
 - d. enter serial number of ASOS hygrometer in Block 16
 - 4. Ship box to NRC via Federal Express.
 - a. Use Federal Express account number 1510-2080-1
 - b. Include internal billing reference information in Block 1: WG3200 BM1JAE-2B.
 - c. Note date shipped.
 - 5.
- D. Notify other parties involved.
 - 1. Make entry on form H-28 to notify EMRS.
 - 2. Notify Regional ASOS Specialist or EPM (provide date box was shipped and copy of H-14).

III. Display Unit(s)

- A. Disconnect power.
 - 1. Turn power off.
 - 2. Disconnect AC power line connector.
 - 3. Remove signal input cable.
- B. Remove display unit(s) from rack (at observer's area).
- C. Pack and ship to NRC.
 - 1. Use box(es) suitable for packing and shipping display unit(s).
 - 2. Pack display unit(s) securely into box.
 - 3. Include H-14 form for each display unit.

4. Ship box to NRC via best Surface means.
- D. Notify others involved.
 1. Make entry on form H-28 to notify EMRS.
 - 2: Notify Regional ASOS Specialist or EPM (provide date display unit was shipped-and copy of H-14).

IV. Site Restoration

See the attached extract from the National Weather Service Disposal Plan for Equipment Replaced by ASOS Implementation.

EFFECT ON OTHER INSTRUCTIONS

None.

J. Michael St. Clair
Chief, Engineering Division

Attachment

IV. Disposal and Site Restoration

- A. AC power wire leads from mounting pipe
 - 1. Clip all three wire leads down to the insulation.
 - 2. Cover each clipped wire end with appropriate size nylon-insulated, closed-end connectors (equivalent to Radio Shack Cat. No. 64-3041) and crimp.
 - 3. Completely wrap each connector separately with electrical tape.
- B. General purpose test equipment used for maintenance
 - 1. May be retained by the regions at their discretion and expense. Otherwise, each unit should be prepared for shipment and sent to the NRC for restocking at the NLSC.
 - 2. Each region may dispose of all related materials at its discretion.

ERRATA SHEET 1 (for Electronics Technicians)
Engineering Division
W/OS0321: BGM/HD

Pen-and-Ink changes to H083 Maintenance Note 12.

General

The purpose of this errata sheet 1 is to provide pen-and-ink changes to Maintenance Note 12, "Non-ASOS H083 Removal at Selected Sites."

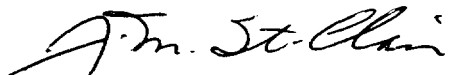
Effects on -Other Instructions

H083 Maintenance Note 12.

Procedure:

Make the following pen-and-ink changes to H083 Maintenance Note 12.

1. Page 1, cross-out all of item "C" under Section I (First Things First), and the contents of Section III [Display Units(s)] on page 2.
2. Page 2, replace Section III with "Excess all display units (receivers) on site in accordance with the National Weather Service Disposal Plan for Equipment Replaced by ASOS Implementation."



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Chief, Engineering Division

ERRATA SHEET 2 (for Electronics Technicians)

Engineering Division

W/OS0321: HD/BGM

Pen-and-Ink changes to H083 Maintenance Note 12.

General

The purpose of this errata sheet 2 is to provide pen-ink changes to Maintenance Note 12, "Non-ASOS H083 Removal at Selected Sites".

Effects on Other Instructions

H083 Maintenance Note 12.

Procedure:

Make the following pen-and-ink changes to the Non-ASOS H083 Removal at Selected Sites Maintenance Note 12.

1. Page 2, add to Section III: "Before excessing display unit(s) through normal channels, remove the + 5 Volt Power Supply (TSL P\N 1063-202, ASN# H083-3A2) and return it with an H-14 form to NRC for restocking. Use a separate shipping container with adequate packing material and send it to NRC via regular mail."



Acting Chief, Engineering Division

LIST OF CANDIDATE SITES WITH NON-ASOS HYGROTHERMOMETER TO BE REFURBISHED
INCLUDING SERIAL NUMBER OF ASOS HYGROTHERMOMETER IN FINAL CONFIGURATION

<u>I D</u>	<u>SITE</u>	<u>ASOS</u>	<u>HYGRO</u>	<u>SERIAL#</u>	<u>K220</u>	<u>REGION</u>	<u>MONITORING</u>	<u>BEGAN</u>
BLF	BLUEFIELD			T0434	Y	Eastern		
CKB	CLARKSBURG			T0410	NO	Eastern		
ELM	ELMIRA			T0330	Y	Eastern		
EWN	NEW BERN			T0405	Y	Eastern		
HLG	WHEELING			T0433	Y	Eastern		
MGW	MORGANTOWN			T0345	NO	Eastern		
MPV	MONTPELIER			T0268	Y	Eastern		
OSU	COLUMBUS (OHIO ST U)			T0441	NO	Eastern		
UCA	UTICA			T0367	Y	Eastern		
CSG*	COLUMBUS, GA			T0309	Y	Southern	03/16/93	
DHN	DOTHAN			T0415	NO	Southern		
ESF	ALEXANDRIA			T0443	Y	Southern		
GWO	GREENWOOD			T0425	NO	Southern		
JBR	JONESBORO			T0437	NO	Southern		
LFT	LAFAYETTE			T0440	Y	Southern		
MCN*	MACON			T0308	Y	Southern	07/02/93	
MLU	MONROE			T0442	Y	Southern		
MSL	MUSCLE SHOALS			T0374	NO	Southern		
TCL	TUSCALOOSA			T0421	NO	Southern		
DET	DETROIT (CITY AP)			T0333	NO	Central		
DTW*	DETROIT			R0034	Y	Central	03/16/93	
FNT*	FLINT				Y	Central	01/13/93	
LOZ	LONDON			T0265	NO	Central		
LHX	LA JUNTA			T0058	NO	Central		
MBS	SAGINAW			T0350	Y	Central		
STJ	ST JOSEPH			T0351	NO	Central		
ALW	WALLA WALLA			T0361	Y	Western		
BTM	BUTTE			T0359	NO	Western		
BZN	BOZEMAN			T0357	NO	Western		
EPH	EPHRATA			T0381	NO	Western		
LVM	LIVINGSTON				NO	Western		
MHW	MOSES LAKE			T0380	Y	Western		
OLM*	OLYMPIA			R0011	Y	Western	12/03/92	
PIR	PIERRE			T0276	NO	Western		
PSC	PASCO			T0378	NO	Western		
SFF	SPOKANE (FELTS AP)			T0375	NO	Western		

* - LCD sites that have been monitored by AOMC for at least one (1) year with all temperature performance modifications in place.

HO83 MAINTENANCE NOTE 13 (for Electronics Technicians)

Engineering Division
W/OS0321 :MC/BGM

Autobalance Module Threshold Resistor (R5)

GENERAL

The autobalance module for the ASOS hygrothermometers (1088 and refurbished 1063 versions) differs from the autobalance module for the station HO83 hygrothermometers because of changes early in the ASOS implementation.

Though the spares stocked at NLSC are correct for the station HO83, changes to the logistics system to stock different autobalance modules for the ASOS hygrothermometer will affect the logistics for the station hygrothermometer as described below.

The modules differ in the threshold resistor (R5) that determines the sensitivity of the autobalance function to dirt on the mirror. Both versions, described below, are now stocked.

PROCEDURE

1. The following actions are being taken.

A. Two different autobalance modules will be stocked: one for the ASOS hygrothermometers (R5 = 200K ohms) and one for the remaining station HO83 hygrothermometers (R5 = 249K ohms).

B. The ASOS hygrothermometer autobalance stock will be maintained as:

ASN: S100-2MT4A1R7
NSN: 6625-01-423-1323
Vendor P/N: 1063-600
The R5 resistor = 200K ohms.

C. The station HO83 hygrothermometer autobalance module stock will be maintained as:

ASN: HO83-2A1R7
NSN: 6660-01-228-1209
Vendor P/N: 1063-600-I
R5 resistor = 249K ohms

2. The following actions are required at each non-ASOS HO83 site:

A. On the next trip to each site, inspect the R5 resistor for its value. Reference the autobalance printed circuit Figure 1 for location of R5 resistor.

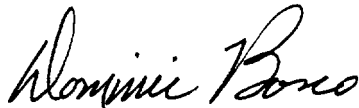
- B. The resistor is marked with the resistance value. If marked with 249xx, the value is a 249K ohm resistor and is correct. If the resistor is positioned so that the resistance value is not visible, use a multi meter to decide the value. A resistance reading near 250K ohms is correct. A reading closer to 200K ohms is incorrect.
- C. If it is determined that the correct R5 resistor is installed, reinstall the autobalance.
- D. If it is determined that the incorrect R5 resistor is installed, return the autobalance module to NLSC and replace with the correct module.
- E. Inspect the spare's kit and return any autobalance modules found to NLSC. Most kits did not include the autobalance module.
- F. Order from NLSC per information in section 1C above. Documentation was changed to reflect the new logistics information.

EFFECT ON OTHER INSTRUCTIONS

None.

REPORT MAINTENANCE ACTION

None.



Acting Chief, Engineering Division

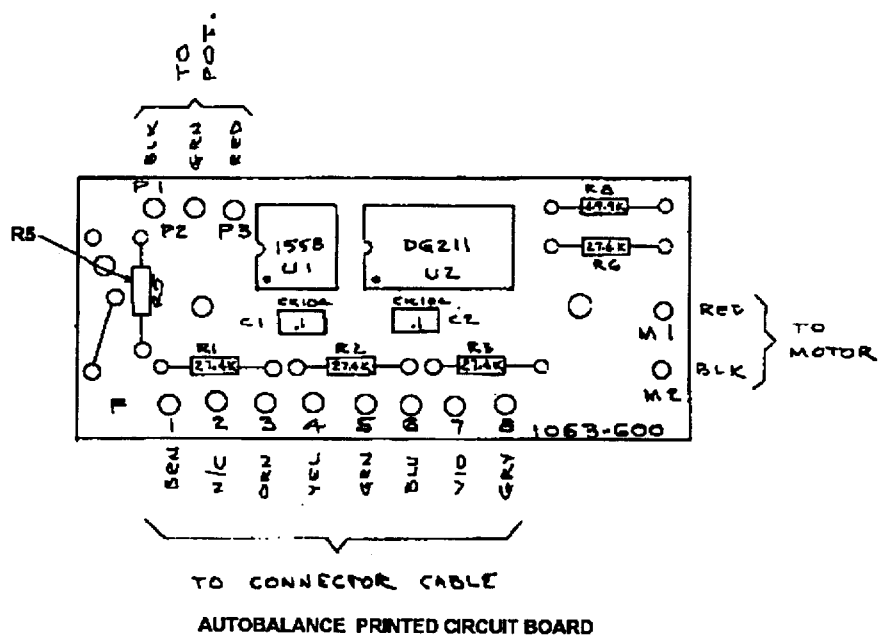


FIGURE 1

Non-ASOS HO83 Removal

GENERAL

This note provides instructions for removing decommissioned non-Automated Surface Observing System (ASOS) HO83 hygrothermometers. The sensors, transmitters, and the receiver +5 volt power supply will be refurbished and used in the ASOS. Please remove and return the hygrothermometers when possible. This maintenance note supersedes EHB-8 Maintenance Note 12, Section 2.4. Additional information is provided which was not included in the original Maintenance Note 12.

PROCEDURE

- I. First Things First
 - A. Coordinate removal with regional headquarters (EPM) and field level supervisor (AES/ESA/MIC).
 - B. Order special packing box from NLSC for HO83 transmitter and aspirator units using stock number S100-H083-BX.
 - c. Find boxes suitable for shipping both the special box (in step B) and the +5 volt power supply from the HO83 receiver/display unit(s) located in the observers area.
 - D. Notify observers of impending removal.
- II. Transmitter and Aspirator/Sensor Units
 - A. Disconnect power.
 1. Turn off AC circuit breaker for non-ASOS H083.
 2. Turn off the transmitter unit's (electronic enclosure) main power.
 - B. Remove subassemblies.
 1. Record serial number of the H083.
 2. Remove the aspirator (including angle bracket) from the transmitter (electronic enclosure).
 3. Disassemble angle bracket into struts.

4. Remove the transmitter from mounting pipe.
- C. Pack and ship subassemblies and any kit of spare parts not needed to maintain H083s at other sites to the National Reconditioning Center (NRC).
1. Use the special packing box from NLSC with stock number S100-H083-BX.
 2. Pack transmitter, aspirator, struts, and screws (in closed container) into the box.
 3. Include H-14 forms.
 - a. 1 for transmitter
 - b. 1 for aspirator
 - c. enter organization code of technician doing removal in Block 2
 - d. enter serial number of ASOS hygrometer in Block 16
 4. Notify other parties involved.
 - a. Make entry on Form H-28 to notify EMRS.
 - ^Ab. Notify Regional ASOS Specialist or EPM (provide a date when box was shipped and a copy of the H-14).
 - ^bc. Report completed deactivation on a Weather Service Form A-26 maintenance record, per instructions in EHB-4, Part 2, Appendix F, using reporting code H083T.
- III. Display Unit(s) and +5 Volt Power Supply
- A. Power Removal.
1. Turn power off.
 2. Disconnect AC power line connector.
 3. Remove signal input cable.
- B. Remove display unit(s) from the rack (at observers' area).
- C. Before excessing a display unit(s) through normal channels, remove the +5 volt power supply (TSL P/N 1063-202, ASN, H083-3A2) and return it with form H-14 to the NRC for restocking.
1. Notify others involved.
 - a. Make entry on form ^{A-26}~~H-28~~ to notify EMRS.

- b. Notify Regional ASOS Specialist or EPM (provide a date that +5 volt power supply was shipped and a copy of the H-14).
 2. Pack and ship the +5 volt power supply along with the special packing box containing the sensor and transmitter via Federal Express.
 - a. Use Federal Express account No. 1510-2080-I
 - b. Include internal billing reference information in Block 1: WG3200 BM1JAE-2B.
 - c. Note date shipped.

IV. Site Restoration

A. AC power wire leads from mounting pipe

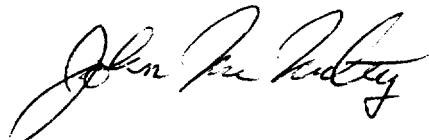
1. Clip all three wire leads down to the insulation.
2. Cover each clipped wire end with a proper sized nylon-insulated, closed-end connector (equivalent to Radio Shack Cat. No. 64-3041) and crimp.
3. Completely wrap each connector separately with electrical tape.

B. General purpose test equipment (GPTE) for maintenance

1. GPTE may be retained by the regions at their discretion and expense. Otherwise, each unit should be prepared for shipment and sent to the NRC for restocking at the NLSC.
2. Each region may dispose of all related materials at its discretion. Notify regional property custodian prior to disposal. Follow regional guidelines if/when disposing of GPTE.

EFFECT ON OTHER INSTRUCTIONS

This Maintenance Note supersedes EHB-8, Maintenance Note 12, Section 2.4.



Chief, Engineering Division

ERRATA SHEET NO 1 (for Electronics Technicians)

Engineering Division
W/OS0321:BGM/HD

Pen-and-Ink changes to HO83 Maintenance Note 14.

General

The purpose of this Errata Sheet No. 1 is to make pen-and-ink changes to Maintenance Note 14, entitled "Non-ASOS HO83 Removal at Select Sites," dated September 27, 1996.

Effects on Other Instructions

None

Procedure:

The changes are to be made on page 2, Section II, C.4 (**Transmitter and Aspirator/Sensor Units**) and on page 2, of Section III, C.1.a [**Display Units(s)**].

1. Make the following pen-and-ink changes to Section II, C.4.a: delete entire contents **"Make entry on Form H-28 to notify EMRS."** Section II, C.4.b: strike out b and replace with a. Section II, C.4.c: strike out c and replace with b.
2. Section III, C.1.a: Replace "form H-28" with "Form A-26."



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Chief, Engineering Division